IN THE CLAIMS:

1. Hydrotreatment process of a hydrocarbon feedstock using at least one hydrotreatment reactor and a fractionation unit, said fractionation unit containing two separate first and second injection zones for hydrocarbon feedstocks each zone being in flow communication with a common upper vaporization zone for the light fractions and each injection zone having its own distinct draw-off line for the liquid bottoms from such respective injection zone, said process comprising:

- subjecting the hydrocarbon feedstock to a preliminary desulfurization treatment,
- injecting the hydrocarbon feedstock into the first injection zone of the fractionation unit,
- removing the liquid bottoms through the draw-off line of the first injection zone and passing such bottoms from the first zone on into said hydrotreatment reactor,
- injecting the effluents from said hydrotreatment reactor into said second injection zone of the fractionation unit,
- passing the light fractions from the common zone through an evacuation line, and
- removing the heavy liquid bottoms of the second injection zone through the draw-off line of the second injection zone.

2. Process according to Claim 1, wherein said preliminary desulfurization treatment is carried out in an apparatus chosen from the group consisting of a first

hydrodesulfurization reactor the operating conditions of which (P, T, LHSV) can vary from those of said hydrotreatment reactor, a sweetening apparatus, and a sulfur trap.

3. Process according to Claim 2, wherein said hydrotreatment reactor is a hydrodesulfurization reactor.

4. Process according to Claim 3, wherein said hydrocarbon feedstock is chosen from the group consisting of gasoline, kerosene, gas oil, and a vacuum distillation cut.

5. Process according to Claim 4, wherein the liquid bottoms of said injection zones of the fractionation unit are isolated from each other by a partition disposed inside the fractionation unit.

6. Process according to Claim 5, wherein the partition is vertical.

7. Process according to Claim 5, wherein the partition is horizontal.

8. Process according to Claim 1, wherein the light fractions leaving the common zone through the evacuation line have a sulfur content that is lower or equal to a set limit value determined by the desired product quality.

9. Process according to Claim 1, wherein the light fractions leaving the fractionation unit through the evacuation line are treated in a third reactor specifically to modify their residual content of sulfur or aromatic compounds.

10. Process according to Claim 9, wherein catalyst used in said third reactor is different from that used in said hydrotreatment reactor and is platinum-based or thioresistant.

11. Apparatus for hydrotreating a hydrocarbon feedstock comprising:

a hydrocarbon feedstock supply,

a desulfurization reactor fed by said supply,

at least one separate hydrotreatment reactor,

a fractionation unit disposed between the desulfurization reactor and said hydrotreatment reactor,

said fractionation unit containing an internal partitioning structure defining two distinct injection zones in flow communication with a common upper vaporization zone,

an evacuation line for withdrawal downstream of light fractions from the vaporization zone,

said fractionation unit having separate lines for carrying respectively the effluents from the desulfurization reactor and the effluents from the hydrotreatment reactor to the fractionation unit, with one of said lines carrying the effluents from the desulfurization reactor into one of said zones, and the other of said lines carrying the effluents from the hydrotreatment reactor into the other of said zones,

- the fractionation unit having two different draw-off lines through which are removed, from the injection zones respectively, the liquid bottoms of the effluents of the desulfurization

reactor that are passed on to the hydrotreatment reactor and separately of the effluents from the hydrotreatment reactor that are passed on downstream.

12. Hydrotreatment apparatus according to Claim 11, wherein the desulfurization reactor is a hydrodesulfurization or a sweetening reactor.

13. Hydrotreatment apparatus according to Claim 11, wherein the separation means is a vertical partition extending from the bottom of the fractionation unit.

14. Hydrotreatment apparatus according to Claim 13, wherein the partition consists of a cylindrical element disposed inside and preferably concentrically with the vertical wall of the fractionation unit.

15. Hydrotreatment apparatus according to Claim 11, wherein the separation means are horizontal and that the two lines carrying, respectively, the effluents from the desulfurization reactor and from the hydrotreatment reactor end at different heights of the fractionation unit respectively above and below the horizontal position of the separation means.

16. Hydrotreatment apparatus according to Claim 15, wherein the horizontal separation means is a tray provided with at least one riser.

17. Hydrotreatment apparatus according to Claim 11, wherein the hydrotreatment reactor is a hydrodesulfurization reactor.

18. Hydrotreatment apparatus according to Claim 12, wherein the hydrotreatment reactor is a hydrodesulfurization reactor.

19. Apparatus according to Claim 11, further comprising another reactor wherein are treated the light fractions removed from the fractionation unit through the evacuation line, said other reactor having a more specific action depending on the residual content of sulfur or aromatic compounds of said light fractions.

20. Apparatus according to Claim 17, further comprising another reactor wherein are treated the light fractions removed from the fractionation unit through the evacuation line, said other reactor having a more specific action depending on the residual content of sulfur or aromatic compounds of said light fractions.